

What is claimed is:

1. A thin film-structure composed of a three-dimensional deformed thin film made of an amorphous material having an supercooled liquid phase region.
2. A thin film-structure as defined in claim 1, wherein the amorphous material has a glass-transition temperature within 200-600°C and a temperature width of not less than 20°C in the supercooled liquid phase region.
3. A method for producing a thin film-structure comprising the steps of:
  - forming on a substrate a thin film made of an amorphous material having an supercooled liquid phase region,
  - heating the thin film to a temperature within the supercooled liquid phase region and thereby deforming the thin film in a given shape, and
  - cooling the thin film to room temperature from the temperature within the supercooled liquid phase region to stop deforming the thin film and thereby forming the thin film-structure.
4. A method for producing a thin film-structure as defined in claim 3, wherein the amorphous material has a glass-transition temperature within 200-600°C and a temperature width of not less than 20°C in the supercooled liquid phase region.
5. A method for producing a thin film-structure as defined in claim 3 or 4, wherein the thin film is deformed by its weight to form the thin film-structure.
6. A method for producing a thin film-structure as defined in claim 3 or 4, wherein the thin film is deformed by mechanical external force to form the thin film-structure.
7. A method for producing a thin film-structure as defined in claim 3 or 4, wherein the thin film is deformed by electrostatic external force to form the thin film-structure.
8. A method for producing a thin film-structure as defined in claim 7,

wherein an opposite electrode is formed opposing to the thin film, the thin film being made of a conductive material and the thin film is deformed by the electrostatic external force generated between the thin film and the opposite electrode, thereby to form the thin film-structure.

*Concl G1*

9. A method for producing a thin film-structure as defined in claim 7, wherein an electrode layer made of a conductive material is formed nearby the thin film, an opposite electrode being formed opposing to the thin film, and the thin film is deformed by the electrostatic external force generated between the electrode layer and the opposite electrode, thereby to form the thin film-structure.

10. A method for producing a thin film-structure as defined in claim 3 ~~or~~ 4, wherein the thin film is deformed by magnetic external force to form the thin film-structure.

*Subj P1*

11. A method for producing a thin film-structure as defined in claim 10, wherein a magnetic layer made of a magnetic material is formed nearby the thin film, an opposite ~~magnetic~~ being formed opposing to the magnetic layer, and the thin film is deformed by the magnetic external force generated between the magnetic layer and the opposite electrode.

*Subj G1*

12. A method for producing a thin film-structure as defined in claim 11, wherein the thin film is heated in a temperature range of the Curie Temperature of the magnetic material of the magnetic layer from a temperature within the supercooled liquid phase region.

13. A method for producing a thin film-structure as defined in claim 12, wherein the Curie Temperature of the magnetic material is 210-1200°C.

14. A method for producing a thin film-structure as defined in claim 13, wherein the magnetic material is at least one from Ni, Fe, Co and Mn.

15. A method for producing a thin film-structure as defined in claim 3 ~~or~~ 4, wherein a subsidiary layer made of a material having a different thermal

expansion coefficient from that of the amorphous material is formed nearby the thin film, and the thin film is deformed by the stress, resulting from the difference in thermal expansion coefficient between the thin film and the subsidiary layer, generated in their interface.

*Concl G1*

16. A method for producing a thin film-structure as defined in claim 15, wherein the subsidiary layer has a thermal expansion coefficient of not more than  $5 \times 10^{-6}$  or  $15 \times 10^{-6}$ - $40 \times 10^{-6}$  at not less than  $200^{\circ}\text{C}$ .

17. A method for producing a thin film-structure as defined in claim 15, wherein the subsidiary layer has a not more than one-hundredth thickness of the thin film.

*Sub G1*

18. A method for producing a thin film-structure as defined in claim 15, wherein the subsidiary layer is a mixed layer made of the material of the substrate and the amorphous material of the thin film which are mixed.

*Sub G1*

19. A method for producing a thin film-structure as defined in claim 3 ~~or~~ 4, wherein a subsidiary layer including an internal stress is formed nearby the thin film, and the thin film is deformed by the stress, resulting from the difference in internal stress between the thin film and the subsidiary layer, generated in their interface.

20. A method for producing a thin film-structure as defined in claim 19, wherein the subsidiary layer has a compressive or tensile stress of which absolute value is 1MPa to 3GPa.

21. A method for producing a thin film-structure as defined in claim 19, wherein the subsidiary layer has a not more than one-hundredth thickness of the thin film.

*Sub G1*

22. A method for producing a thin film-structure as defined in claim 19, wherein the subsidiary layer is a mixed layer made of the material of the substrate and the amorphous material of the thin film which are mixed.